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Professional paper

THE MILL AS AN OBJECT WITH A SOCIO-ECONOMIC CHARACTER

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Abstract

The mill, as an important technological and social structure, has played a key role in the development of different societies in different historical periods. In the socio-economic context, the mill has been more than a device for processing grains; it has been a focal point for the community and has profoundly influenced the local economy. In rural and residential areas, the mill has provided an essential service, enabling the production of flour as a main source of food for the population.
Mills, especially those powered by water or wind, have been a symbol of technological progress and innovation in the use of natural resources. Through it, the increase in production and greater effectiveness in the rural economy has been achieved. As production became more centralized and accessible, mills contributed to the development of local trade and the formation of a sustainable economic infrastructure.
Socially, mills have served as meeting points for community members, strengthening social ties. Additionally, mills have played a role in the distribution of wealth and resources, as they were often owned by wealthy individuals or local authorities, creating a socio-economic hierarchy within society.
In conclusion, the mill represents an object with wide socio-economic impact, carrying within it technological, commercial and social histories that have helped shape different societies and economies.

Keywords: Milling, production, technology, community, economy.

Introduction

One of the objects of social character in the field of human activity was the flour mill. The history of the flour mill is very ancient, since people tried to improve their nutrition through cereals, the need arose for a machine to grind them and to extract flour, the basic product for cooking from the raw material.
Mills are devices that are used to grind or process various materials, such as various cereals, oil plants, sugar plants, salt, minerals, etc. Depending on the principle of operation and the material they process, there are several types of mills.
Mills as economic objects have been very widespread in the Albanian world. Grain grinding is an old technology. The Albanian people knew this skill centuries ago and, thanks to it, created a long tradition of using the mill. Among the first mills we find the "Mokra", a hand mill, which, besides being laborious, provided a small amount of flour during grinding, but it was possible for every family to have its own.

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1. Mokra Mill.

The Mokra or hand mill was the first primitive grain grinding mechanism among us. However, although primitive, it has the honor of being the first, as the most advanced mechanism, in the history of flour. The Mokra or ancient mill, which was commonly used, almost in every home, was small and light. It was used by one person.

The Mokra consisted of two flat and round flour stones, in the shape of a wheel. The upper stone with a hole in the middle rotated on another similar stone, which is larger and stationary. The Mokra was placed in a niche and reinforced with a vertical pillar reinforced with a beam. Great arm strength was used to move each one. The Mokra in Kosovo was used until the 50s of the 20th centuries.[1]

Figure 1. Mokra Mill

2. Windmills

These mills harness the energy of the wind to perform mechanical work such as grinding grain or pumping water. They are common in areas with strong winds. They have found widespread use both in time and space.
Windmills were located in flat areas and on coasts where the winds were almost constant.

Figure 2. Windmill, Montreal, Canada, photo. P. H.

[1] Pajazit Hajzeri, Bujqësia në Kosovë gjatë mesjetës II, https://pashtriku.org/drscpajazit-hajzeri-zhvillimi-i- bujqesise-ne-kosove-gjate-mesjetes-ii/

These mills had different layouts. Their layout was mainly circular, but in rare cases also square. The height of the walls was much higher than the height of the walls of water mills. This forced them to take a conical shape due to the rotating mechanism which had to have large wings so that the wind could catch them more easily and rotate them.
The Netherlands is one of the countries with the largest number of windmills, this is made possible by the large flat spaces, under the influence of numerous winds.
We also had windmills in Kallm, Albania, for which we have little data, whether they functioned for an activity for which they were built or whether they remained only as relics of the time.

Figure 3. Windmills in Kallm, Albania[2]

3. Water and stone mills

These mills use the energy of flowing water to set in motion the mill wheel, which is then used to grind grains or to perform other industrial tasks.
These are traditional mills that are mainly used for grinding grains, where large rotating stones grind the grains.
The use of water energy for grinding was an important step in human life, because it freed him from a heavy burden from grinding grain by hand, to grinding grain with water energy. The water mill is a simple object built on the principle of the millstone mechanism, but now the power of the arm is no longer used, but the power of water energy, which sets the millstone mechanism in motion, based on the hydromechanical system.[3]
Mills were the property of each family that owned them. Mills could belong to a particular family, a brotherhood with a larger number of families, or the common village mill.
In many cases, each extended family had its own mill, in which it ground the grain it had collected during the year. The function of a mill depended on the amount of water that was available or the

[2] https://dritare.net/plazhi-i-kallmit-holanda-e-vogel-shqiptare

[3] Pajazit Hajzeri, Bujqësia në Kosovë gjatë mesjetës II, https://pashtriku.org/drscpajazit-hajzeri-zhvillimi-i- bujqesise-ne-kosove-gjate-mesjetes-ii/

river where it had changed. Mills were not often used in autumn, a little in winter and spring, but during the summer it was worked on a cause for causing water.

Figure 4. Internal spaces in the mill, P. H.

Those families who had their own mill on a larger watercourse in a river, the work at the mill continued throughout the year. Inside the mill was also the annex of the miller's residence, which worked there all the time, waiting for those who, in the absence of mills and water in certain seasons, used the mill that met the conditions.

The person who stayed at the mill also created the queue of those who wanted to grind, and also housed people who went to grind livestock.

The mill always had a person staying there. Water mills ground grain by rotating the upper stone rubbing against the lower stone, which was static and did not move. The production of millstones for a large territory was done in the stone mine in Boletin, a mine that belonged to the family of Isa Boletin.

The stones should be of the same size, thickness, and diameter as the joint, and they should be of the same composition. One stone should not be softer and the other harder, as they would shrink at different times.

The mill consisted of a rectangular architectural object. The construction material for the construction of the mill was wood and stone. We had mills built entirely of wood, but we have mills made entirely of stone. The roof of the mill in most of the remains had two water courses, rarely with four water courses, and was covered with boards, straw, sheet metal and traditional tiles. The mill also had several elements that made it up in its entirety.

This object had the hut in the lower part, in which the wheel was placed, which through an axis penetrated through the lower stone and kept the upper stone in motion. The canal that brought water from the river, through a wide wooden or metal pipe, penetrated the mill's shed, where the diameter of this pipe was reduced so that the water passed through with great pressure to rotate the wheel that set in motion the rotating stone for grinding grain.

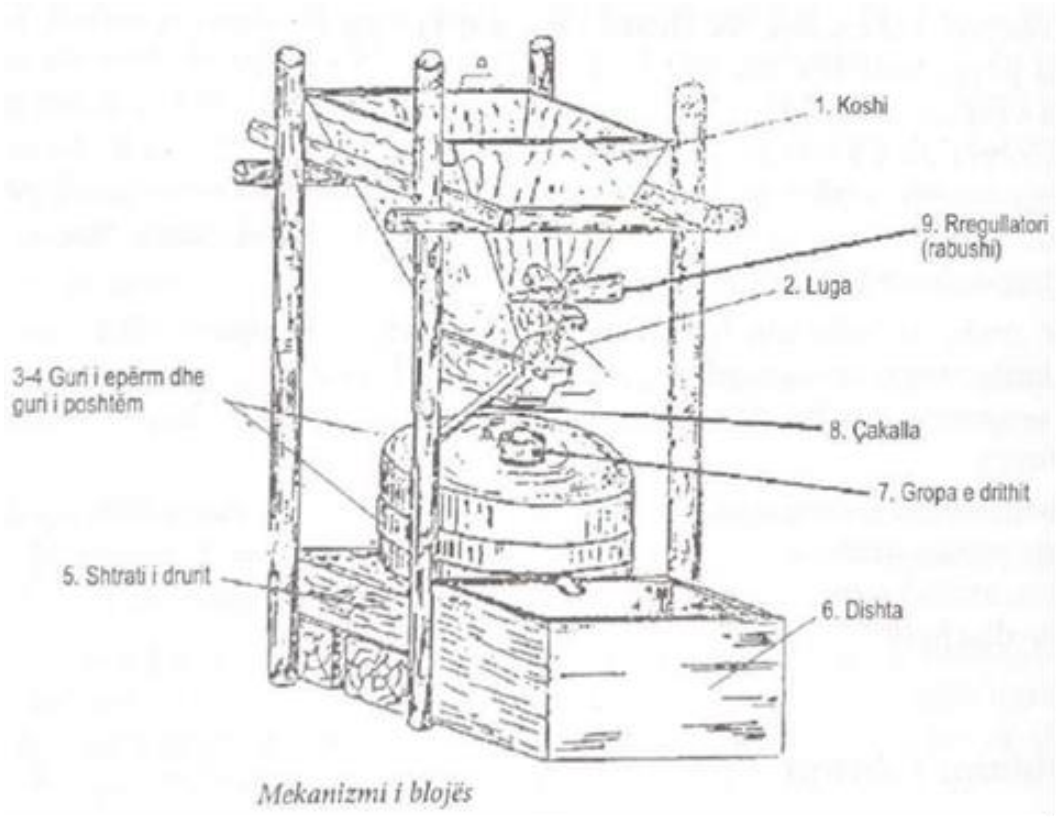


Figure 54[4]. Components of the mill mechanism

Fig. 6.5 Water outlet from the mill shed

Where the water discharge of one mill ended, the canal for the next mill in the same stream or river usually began to be built.

[4] Shefki Stublla, Mbijetesa, (Aspekti muzeor), Prishtinë, 2007, p. 159. Shih. Pajazit Hajzeri, Përmbledhje e Studimeve nga Historia I, Prishtinë 2021, p. 50.
[5] Edmond Ismailati, Mulliri me erë i Tepelenës dhe mullinjtë e tjerë të ujit të kësaj zone, 15.01.2022, https://americaneye.al/mulliri-me-ere-i-tepelenes-dhe-mullinjte-e-tjere-te-ujit-te-kesaj-zone/

This environment also had a small window, from which light penetrated into the mill, at the same time removing the dust created inside, and there was also a space for the person working there.
The components of the grinding mill mechanism included: 1. basket, 2. Spoon, 3-4. upper and lower stone, 5 wooden bed where the stones were placed, 6. flour bowl (disha), 7. Grain hole, 8. Jackal, 9. regulator (rabushi).
In these mills, grains were ground according to the requirements of the people who sent the grain, from coarse grinding to fine grinding for the preparation of flour for cooking.
The use of water power for grinding was an important step in human life, because it freed him from the heavy burden of grinding grain with the power of his hands.[6]

Figure 7. Nexhat Dedia's wooden mill

[6] Edmond Ismailati, Mulliri me erë i Tepelenës dhe mullinjtë e tjerë të ujit të kësaj zone, 15.01.2022, https://americaneye.al/mulliri-me-ere-i-tepelenes-dhe-mullinjte-e-tjere-te-ujit-te-kesaj-zone/

Figure 8. Process during grain milling

4. Electric mills

Used for smaller household or industrial tasks, these mills use electricity to grind materials such as coffee, grain, or minerals.
Each of these types of mills has its own applications and functions, depending on the needs of the user.
Another type of mill is for olives, which are used to extract olive oil from the olive fruit. The process of producing olive oil involves several stages, and mills play an important role in these processes.

Main types of olive mills:

1. Traditional stone mills:

o In this traditional method, the olives are pressed between large stones that rotate over the olive fruit, breaking and squeezing them. After the olives are crushed, the resulting mass is mixed and then pressed to extract the oil. This method is slower and is still used in some rural areas to produce oil in the traditional way.

Figure 9. Olive grinding mill

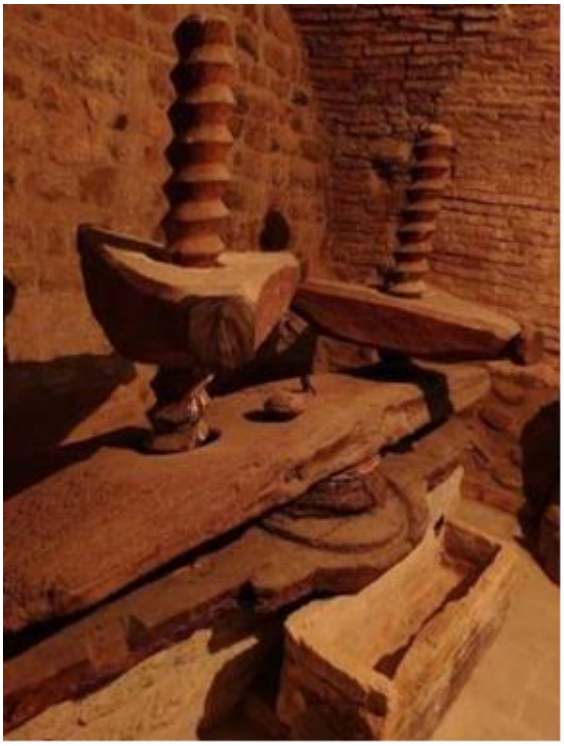
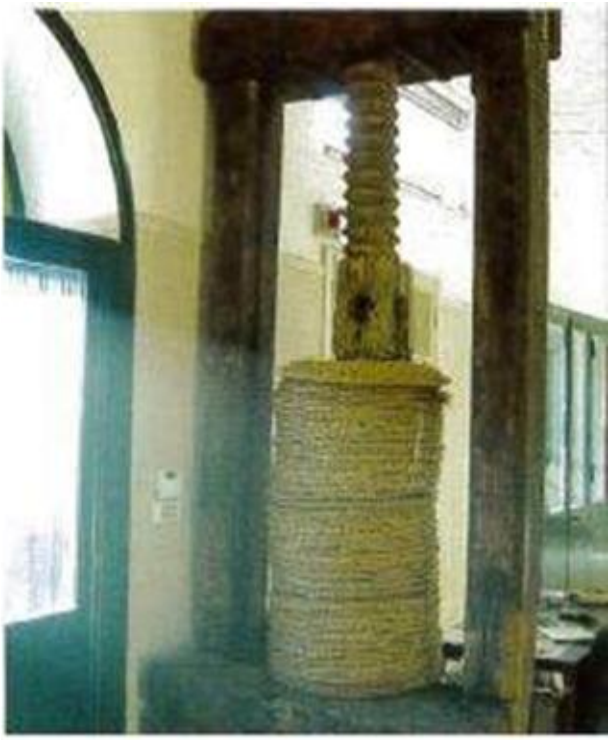
2. Centrifugal mills:

In centrifugal mills, olives are processed in a system where a centrifuge is used to separate the oil from the olive pulp and water. This is one of the most modern systems and is widely used in olive oil processing plants. It is also the modern mill used today, which makes it possible to use the olive fruit to the maximum and extract the largest amount of oil.

Figure 10. Centrifugal olive mill.

3. Pressing Mills:

This method uses a press to press the processed olive mass. After pressing, the oil is separated from the rest of the olive residue.

Figures 11.12. Traditional olive mills by pressing

The olive oil production process includes:

1. **CLEANING** THE OLIVES FROM IMPURITIES.
2. **PRESSING** THE OLIVES TO CREATE A MASS.
3. **MIXING AND SQUEEZING** THE MASS TO SEPARATE THE OIL.
4. **FILTERING** AND STORING THE PURE OIL.

Modern grinders have become increasingly efficient, making olive oil production faster and cleaner.

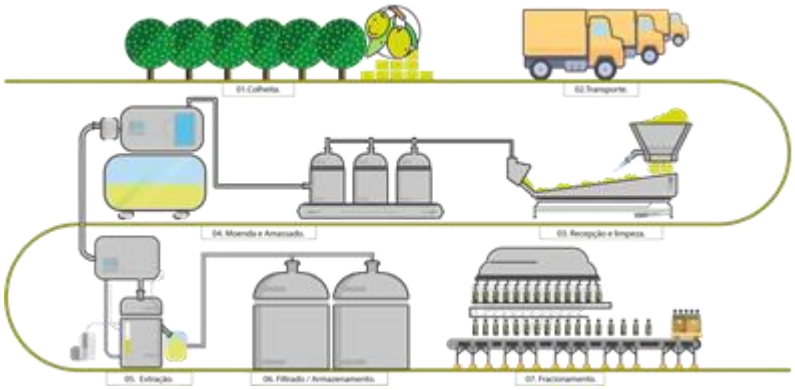


Figure 13. The process of obtaining olive oil

Main types of coffee grinders:

For coffee grinding, there are also special coffee grinders that are used to grind coffee beans before brewing. Coffee grinders are designed to grind coffee to different levels of fineness, from a very fine grind for espresso to a coarser grind for other methods such as filter coffee or French Press.

1. Blade grinders:

These grinders use two metal blades that rotate at high speed to crush coffee beans. They are cheaper and more common, but they are not very accurate in producing uniform particles. The grind with these grinders is coarser and may not be uniform.

2. Burr grinders:

This is the most recommended type of coffee grinder, especially for baristas and coffee enthusiasts. They use two rotating discs (or stones) to crush and grind the coffee beans. These grinders provide a much more uniform and precise grind, ensuring that the coffee has a better taste and is suitable for different preparation methods.

Conical burr grinders: Very efficient and produce less heat during grinding, preserving the aroma of the coffee.
Flat burr grinders: They are known for their precision and are often used in professional coffee shops.

3. Manual grinders:

Figure 14. Mechanical hand grinder for grinding coffee.

Manual coffee grinders are smaller and require physical effort to turn a handle that grinds the coffee. These are ideal for travel or for those who prefer a more traditional method. The grind is uniform and can be adjusted to produce different sized particles.

4. Electric grinders:

They use electricity to grind coffee quickly and efficiently. These grinders come with options to control the degree of grinding, making them very suitable for home or commercial use.

Coffee grinding and methods:

• **VERY FINE GRIND (ESPRESSO):** REQUIRES STONE GRINDERS THAT PROVIDE VERY SMALL AND UNIFORM PARTICLES.

• **MEDIUM GRIND (DRIP COFFEE):** Slightly coarser grind used for filter coffee.
• **COARSE GRIND (FRENCH PRESS):** Requires larger particles for a longer coffee preparation.

Choosing the right coffee grinder is very important to achieve the best quality and aroma of the coffee you prefer.

In addition to the grinders mentioned earlier (such as wind, water, grain, olive, and coffee grinders), there are many other types of grinders that are used for different purposes. Here are some other mills:

Industrial Mills:

These are more sophisticated mills used in industry to grind various materials, such as minerals, coal, cement, etc.

WE HAVE HAMMER MILLS; FOR CRUSHING HARD MATERIALS.

BALL MILLS; FOR GRINDING MINERALS AND OTHER MATERIALS INTO VERY FINE PARTICLES.

VERTICAL MILLS; USED IN THE CEMENT AND MINERALS INDUSTRY.

1. Coal Mills:

These mills are used to grind coal into small particles to be burned in power plants and to produce electricity. The coal is ground into a powder to increase the combustion efficiency.

Figure 15. Mineral and cement mill, photo P. H

2. Cement Mills:

These are large industrial mills used to grind cement ingredients, such as limestone and clay, to produce cement powder that is then mixed with water to make concrete.

3. Ball Mills:

This type of mill is used in various industries to grind minerals and various materials into very fine particles. They are mainly used in the mining and metalworking industries. Metal balls rotating inside a large cylinder collide with the material to crush it.

Figure 16. Mill with metal balls used for grinding minerals, photo. P. H.

These mills are used to grind various minerals extracted from the earth, such as gold, silver, copper and aluminum, in order to prepare them for further processing.

5. Salt Mills:

They are small mills used to grind large grains of salt into smaller particles, usually for use in the kitchen. They can be manual or electric.

6. Sugar Mills:

These mills are used in the sugar processing industry to extract the juice of sugar cane or sugar beets, which is then processed to produce crystallized sugar.

7. Spice Grinders:

They are used to grind spices such as pepper, cinnamon, cloves and many others. They can be manual or electric and are used in kitchens to preserve the freshness and flavor of spices.

8. Wood Mills:

Used to chop or grind wood into smaller particles or powder for various purposes, such as producing wood pellets for heating or processing wood for other industries.

9. Paint Mills:

Used to mix and grind various pigments to produce industrial paints and inks.

Each type of mill is designed to suit the specific requirements of the materials being processed and the respective industries.

Conclusion

Mills were initially built to provide and improve the best nutrition for people, but over time they increased and were perfected for various products. In this paper, we have mentioned several types of mills from the first mechanical hand mills to industrial mills used in the preparation of flour for food, those in mineralogy, the pharmaceutical industry, the dye industry, etc.
Mills have played a major role in the economic development of every family, city and state in general, they are among the oldest industries which even today have a worthy place in the economic development of every country.
In many countries around the world, mill buildings are national assets in the range of cultural heritage, and addresses for visitors who are passionate about these architectural works with a socio-economic character.

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